

REMARKS

Claims 1-30 remain in this application. Claims 1-9, 19-21, 23, 25, 27, and 29 have been cancelled in this amendment. Claims 10, 17, 18, 22, and 30 have been amended. No new matter has been added. Reconsideration is respectfully requested.

Applicant is not conceding that the subject matter encompassed by the claims prior to this amendment is not patentable over the art cited by the Examiner. Claims 1-9, 19-21, 23, 25, 27, and 29 were cancelled in this amendment solely to facilitate expeditious prosecution of the subject matter of claims 10-18, 22, 24, 26, 28, and 30. Applicant respectfully reserves the right to pursue claims, including the subject matter encompassed by the claims as presented prior to this amendment and additional claims, in one or more continuing applications.

Claims 1-9, 19-21, 23, 25, 27, and 29 were rejected under 35 U.S.C. §103(a) over Blumenau et al. (US Patent Application 2004/0054866), Ofer et al. (US Patent 6,209,059), and a section of the instant application. Claims 1-9, 19-21, 23, 25, 27, and 29 have been cancelled so the rejections are moot.

Independent claim 10 was rejected under 35 U.S.C. §103(a) over Blumenau, Ofer, and the application section. Applicant has amended claim 10 to clarify the previously recited limitations of the claim, and has added new limitations to distinguish more clearly over the cited art. The new limitations are supported in the specification at page 15, line 12 - page 16, line 1 and Fig. 1.

Amended independent claim 10 recites a method for processing data that is stored in logical units (LUs) using a plurality of ports that receive commands. Each port has a respective LU command queue for the logical units, and claim 10 recites that each port places its received commands in its queues according to where, i.e. to which LU, the commands are

directed. The commands are converted, and the converted commands are conveyed to the appropriate LU. Amended claim 10 recites that for each port, the order of arrival of converted commands at a specific LU complies with the order of arrival of the received commands at the port. Claim 10 further recites that there is no relation between the order in which concurrent commands arrive at different ports and the order of execution of the converted concurrent commands.

Blumenau describes a data storage apparatus which is divided into logical units. The apparatus has multiple ports which are coupled to hosts using the apparatus, and the apparatus includes a mapping that maps hosts to logical units (Abstract). As is also stated in the Abstract: "The apparatus decodes a host identifier and a logical storage unit specification from each data access request received at each host port, and determines whether or not the decoded host identifier and logical storage unit specification are in conformance with the mapping in order to permit or deny data access of the logical storage unit through the host port."

The Examiner states that Blumenau fails to teach a plurality of command queues, and so combines Blumenau with Ofer (page 3, line 9 of the Office Action). Ofer describes, for his host controller, one set of queues directed to respective logical units (col. 4, lines 18-20, and Fig. 2). However, it is by no means obvious to combine Ofer with Blumenau, since neither suggest nor teach how to order the multiplicity of commands that would result from such a combination. To illustrate with a numerical example, assume that 20 commands arrive at a first port, and 10 commands arrive at a second port. The combination of Blumenau and Ofer would give $30! \approx 2.6 \times 10^{32}$ possible sequences of converted commands to exit from their ports, a large number of these 2.6×10^{32} sequences being illegal.

This is in stark contrast to the ordering provided by

amended claim 10, wherein the order of conveyed converted commands follows the order of arrival of received commands at a given port, but is unrelated to the order of commands received by different ports. The ordering provided by the limitations of claim 10 generates a legal subset of possible command sequences, so that for the numerical example above, the subset generated by claim 10 comprises $30!/(20! \times 10!) \approx 3 \times 10^7$ sequences, all of which are ordered legally.

There is no hint in either Blumenau or Ofer of the multiplicity of legal command sequences provided by embodiments of independent claim 10, and neither Blumenau nor Ofer, separately or in combination, suggest or teach the limitations on orders of command provided by the claim.

Amended independent claim 10 is therefore believed to be patentable over the cited art.

Claims 11-18, 22, 24, 26, 28, and 30, were rejected under 35 U.S.C. §103(a) over Blumenau, Ofer, and the application section. Claims 11-18, 22, 24, 26, 28, and 30 depend directly or indirectly from independent claim 10, and have been amended as necessary to accord with amended claim 10. In view of the patentability of independent claim 10, claims 11-18, 22, 24, 26, 28, and 30 are also believed to be patentable.

Applicant believes that the above amendments and remarks are fully responsive to all of the grounds of rejection raised by the Examiner. In view of these amendments and remarks, applicant respectfully submits that all of the claims currently pending in the present application are in order for allowance. Notice to this effect is respectfully requested.

Respectfully submitted,

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